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ABSTRACT

Ear infections in infants and preschoolers can cause mild or moderate temporary hearing loss, which may in turn affect a child's ability to understand and learn language. Noting that providing children with proper medical treatment for ear infections or middle ear fluid is important in preventing possible problems with language development, this booklet is designed to inform parents and caregivers about how ear infections and middle ear fluid might affect a child's language and what they can do to help. The booklet discusses what it means when a child has an ear infection or middle ear fluid (called otitis media); how to identify symptoms and provide treatment; how ear infections can affect hearing and how to recognize if a child has a hearing loss; how ear infections can affect speech and language learning and where to go for help; and what milestones to look for in a child's language development from birth to age five. The booklet also contains tips for ear infection prevention, suggestions for helping a child learn language and early literacy skills, and resources for more information and help. (HTH)

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Ear Infections and Language Development

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Language development is the foundation for young children's later success in school and beyond. Social relationships, reading, and other everyday activities revolve around the use and understanding of language. Too frequently, however, young children's healthy language development is interrupted for a variety of reasons, including untreated or severe illnesses.

One of the most common illnesses that may affect healthy language development is *otitis media* or middle ear infection. It is one of the most common illnesses of childhood and can affect one or both ears. The infection causes a fluid to build up in the middle ear. This fluid can last for a few months and alters the way in which the bones in the middle ear function. Then a child's hearing, language development, and speech may be affected. Some children may have a loss for just a few weeks. Others may be affected permanently.

Doctors treat middle ear infections in several ways. The important thing for families and other caregivers to remember is that middle ear infections need to be treated right away in order to prevent lifelong injury to children's language development and hearing.

The purpose of this booklet is to provide families and other caregivers with information and suggestions that will help in better understanding *otitis media*. In addition, the booklet will help adults in recognizing when a child has a hearing loss and when to seek professional treatment for it. Finally, families and caregivers will have some suggestions for how to promote the development of language and literacy skills in young children who have chronic middle ear infections or a hearing loss due to middle ear infections.

This booklet is not intended to take the place of medical treatment or other appropriate services. It is intended only to help you understand more about *otitis media* and how it can harm young children's healthy development and learning if not treated properly.

Naomi Karp

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Development and Education

WASHINGTON, D.C. 20208—_____

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Ear Infections and Language Development

How ear infections and middle ear fluid might affect your child's language development

What you can do to help

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What is Otitis Media?

Otitis media, an inflammation of the middle ear (behind the eardrum), is one of the most common illnesses of childhood. There are two different types of otitis media. Either can occur in one or both ears.

- **Acute otitis media**, which is also called an **ear infection**, is an infection of the middle ear. Fluid in the middle ear may remain even after an infection is gone.
- **Otitis media with effusion**, also called **middle ear fluid**, is fluid that is not infected. When a child has a cold, a small tube between the ear and the throat can become blocked, causing fluid to build up in the middle ear.

Most children will have at least one episode of otitis media by one year of age. And 10–20 percent of children will have otitis media three or more times, with fluid lasting an average of one month each time. Persistent ear fluid is more common in children under two years, but it can be seen in children older than two.

The middle ear space behind the eardrum usually contains air. When there is fluid in this space, it can cause the bones in the middle ear not to vibrate properly. This may cause a mild, temporary hearing loss. The mild hearing loss lasts until the fluid is gone. Because this can happen when your child is learning to speak, families and health care providers may have concerns. If there are concerns, a hearing evaluation and/or speech and language evaluation may be appropriate.

What are signs of Otitis Media?

- Child pulls on ear
- Child says ear hurts
- Drainage from ear
- Fever (acute otitis media)
- Irritability
- Poor sleep

A child may have all, some, or none of these symptoms and still have otitis media. Otitis media frequently occurs when a child has a cold. When a child has otitis media with effusion, most of the time there are no symptoms. Ear infections are best detected by your child's health care provider. Contact your health care provider if you think your child may be sick.

How is Otitis Media treated?

Acute otitis media (ear infections) can be treated by:

- **Antibiotics** prescribed by your health care provider. Medicine should be given until it is gone. Fever and pain should decrease within two days.
- **Surgery** to put a tube in a child's ear if your child has a lot of ear infections. This surgery is done by an ear, nose, and throat doctor. This tube allows air to enter the middle ear space. This, in turn, helps the lining of the middle ear return to normal and helps prevent new infections. The tube generally stays in place for six to twelve months and falls out by itself.

Otitis media with effusion (fluid) can be treated by:

- **Waiting for the fluid to go away.** For 60–80 percent of children, middle ear fluid will go away by itself in three months. For 85 percent of children, fluid will go away by itself in six months. A health care provider should check a child's ears regularly during this period.
- **Antibiotics** may help reduce middle ear fluid in a small number of cases.
- **Surgery** to put a tube in the child's ear if fluid continues for four to six months in both ears.

Talk with your child's health care provider about these treatments. It is important to keep follow-up appointments.

How can Otitis Media affect hearing?

When a child has fluid in the middle ear, the fluid reduces sound traveling through the middle ear. Sound may be muffled or not heard. Children with middle ear fluid will generally have a **mild or moderate temporary hearing loss.** (It's as if you plugged your ears with your fingers.) However, some children have **no change in their hearing.**

- **Mild Hearing Loss**—A child may not hear or may hear very faintly the soft sounds at the beginnings and ends of words, such as the "s" in "sun" and the "t" in "cat," and words spoken quickly such as "and."
- **Moderate Hearing Loss**—A child may have trouble hearing most speech sounds, and may have trouble with short, softly spoken words and word endings. It's important to know that some children with otitis media have no loss of hearing. A hearing loss due to middle ear fluid should go away once the fluid is gone.

How can I recognize if my child has a hearing loss?

- Having difficulty paying attention
- Showing a delayed response or no response when spoken to
- Saying "huh?" often
- Not following directions well
- Turning up sound on radios, TV, CDs
- Withdrawing from other children
- Being over-active or uncooperative

Children with temporary hearing loss may show all, some, or none of these behaviors. These behaviors may be different at each age. It is often hard to tell whether a child has a hearing problem or whether the child is just acting a certain way because of age or temperament. If you are not sure, ask your health care provider for help. The milestone chart on the following pages may also be helpful.

What can I do if I am concerned about my child's hearing?

If your child's response to sound seems different or inconsistent, you should request a hearing evaluation to check your child's hearing. Children as young as newborns can have their hearing tested. Health care providers can screen hearing. When a child fails a hearing screening, you should take the child to an audiologist for a hearing evaluation. The audiologist specializes in diagnosis and treatment of hearing loss.

How may language learning be affected by Otitis Media?

During the first three years when children have the most problems with otitis media, they are learning to speak and understand words. Children learn to do this by interacting with people around them. It may be harder to hear and understand speech if sound is muffled by fluid in the middle ear. Some researchers report that frequent hearing loss in children with middle ear fluid may lead to speech and language difficulties. However, other researchers have not found this to be true. Researchers are still studying this. In the meantime, it's best to pay special attention to the language development of children who have middle ear fluid.

What can I do if I'm concerned about my child's speech and/or language development?

When you have concerns about your child's language development, talk to your child's health care provider. A speech-language pathologist specializes in diagnosis and treatment of speech and language problems.

The next two pages describe milestones in language development.

Is my child achieving milestones of language development?

INSTRUCTIONS—Read each question through your child's **age group** and check yes or no. Add the total and see below.

All Yes: Your child is developing hearing, speech, & language in the typical way.

1–2 No: Your child may have delayed hearing, speech & language development. Seek professional advice if you are unsure.

3 or more No: Ask for a referral to an audiologist or speech-language pathologist.

Check One YES	NO	Hearing & Understanding	Child's Age	Talking	Check One YES	NO
❑	❑	Startles to loud sounds.	**Birth to 3 Mos**	Makes pleasure sounds (cooing, gooing).	❑	❑
❑	❑	Smiles when spoken to.		Cries differently for different needs.	❑	❑
❑	❑	Seems to recognize your voice and quiets if crying.		Smiles when she sees you.	❑	❑
❑	❑	Increases or decreases sucking behavior in response to sound.				
❑	❑	Moves eyes in direction of sounds.	**4–6 Mos**	Babbling sounds more speech-like with many different sounds, including *p, b,* and *m*.	❑	❑
❑	❑	Responds to changes in tone of your voice.		Vocalizes excitement and displeasure.	❑	❑
❑	❑	Notices toys that make sounds.		Makes gurgling sounds when left alone and when playing with you.	❑	❑
❑	❑	Pays attention to music.				
❑	❑	Enjoys games like peek-a-boo and pat-a-cake.	**7 Mos to 1 Yr**	Babbling has both long and short groups of sounds such as "tata upup bibibibi."	❑	❑
❑	❑	Turns and looks in direction of sounds.		Uses speech or non-crying sounds to get and keep attention.	❑	❑
❑	❑	Listens when spoken to.		Imitates different speech sounds.	❑	❑
❑	❑	Recognizes words for common items like "cup," "shoe," "juice."		Has 1 or 2 words ("bye-bye," "dada," "mama," "no") although they may not be clear.	❑	❑
❑	❑	Begins to respond to requests.				

(Adapted with permission from the brochure *How Does Your Child Hear and Talk?* © American Speech-Language-Hearing Association.)

Check One YES	Check One NO	Hearing & Understanding	Child's Age	Talking	Check One YES	Check One NO
❑	❑	Points to pictures in a book when named.	1–2 Yrs	Says more words every month.	❑	❑
❑	❑	Points to a few body parts when asked.		Uses some 1–2-word questions ("Where kitty?" "Go bye-bye?" "What's that?").	❑	❑
❑	❑	Follows simple commands and understands simple questions ("Roll the ball," "Kiss the baby," "Where's your shoe?").		Puts 2 words together ("more cookie," "no juice," "mommy book").	❑	❑
❑	❑	Listens to simple stories, songs, and rhymes.		Uses many different consonant sounds at the beginning of words.	❑	❑
❑	❑	Understands differences in meaning ("go-stop," "in -on," "big-little," "up-down").	2–3 Yrs	Has a word for almost everything.	❑	❑
❑	❑	Follows two requests ("Get the book and put it on the table").		Uses 2–3-word "sentences" to talk about and ask for things.	❑	❑
				Speech is understood by familiar listeners most of the time.	❑	❑
				Often asks for or directs attention to objects by naming them.	❑	❑
❑	❑	Hears you when you call from another room.	3–4 Yrs	Talks about activities at school or at friends' homes.	❑	❑
❑	❑	Hears television or radio at the same loudness level as other family members.		Usually talks easily without repeating syllables or words.	❑	❑
❑	❑	Understands simple "who?," "what?," "where?" questions.		People outside family usually understand child's speech.	❑	❑
				Uses a lot of sentences that have 4 or more words.	❑	❑
❑	❑	Pays attention to a short story and answers simple questions about it.	4–5 Yrs	Voice sounds clear like other children's.	❑	❑
❑	❑	Hears and understands most of what is said at home and in school.		Uses sentences that give lots of details (e.g., "I like to read my books").	❑	❑
				Tells stories that stick to topic.	❑	❑
				Communicates easily with other children and adults.	❑	❑
				Says most sounds correctly except a few, like *l, s, r, v, z, j, ch, sh, th.*	❑	❑
				Uses adult-like grammer.	❑	❑

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How can I help my child who has persistent middle ear fluid?

Promote a Healthy Setting

These suggestions will help all children stay healthy. They may be especially important for children who tend to get ear infections and ear fluid.

- Wash child and adult hands after blowing noses or going to the bathroom. This will fight the spread of germs.
- Clean toys that have been in a child's mouth before another child plays with them.
- Follow directions for giving medicine so that it is given on time and for the entire time that is recommended.
- If possible, breastfeed for at least the first four to six months of life to reduce the chance of otitis media.
- Bottle-feed in an upright or slightly leaning position. Cuddle the child in your lap with his head raised up. A child should *not* be put to bed with a bottle. A bottle should not be propped in bed. Those practices may cause the liquid from the bottle to go up a small tube leading to the middle ear, causing middle ear fluid.
- Keep children away from smoke. Cigarette smoke increases a child's chance of middle ear disease.
- If possible, put children in small rather than large groups of children. Colds pass more easily in large groups, and colds in young children can lead to middle ear fluid.

Promote Listening

It can be difficult to hear and concentrate in a noisy area such as a classroom (with lots of children talking) or home (with TV on), even with only a small amount of hearing loss. These suggestions will help all children listen better.

Help children hear and understand your speech–

- Get within three feet of a child before speaking.
- Get your child's attention before speaking.
- Face your child and speak clearly with a normal tone and normal loudness.
- Use visual cues such as moving your hands and showing pictures in addition to using speech.
- Seat your child near adults and children who are speaking.
- Speak clearly and repeat important words, but use natural speaking tones and pattern.
- Check often to make sure your child understands what is said.
- Stand still when talking to your child to decrease distractions.

Decrease background noise, especially for children with hearing loss–

- Turn off unnecessary music and TV in the background.
- Fix noisy appliances such as heaters or air conditioners.
- Limit play with noisy toys.
- Encourage teachers to create quiet areas. For example, use dividers for small group play and reading.
- Close windows and doors when it is noisy outside.

Promote Language Learning

Take advantage of opportunities every day to help children develop their language. All children can benefit from responsive language interactions, especially children with hearing loss due to otitis media.

- Get down on your child's eye level when talking.
- Listen to your child when your child is talking.
- Talk about familiar things—snacks, pets, rain—anything your child knows about and is interested in.
- Talk with your child during mealtimes, baths, and throughout the day.
- Play interactive games with your child to encourage talking, such as pat-a-cake.
- Ask simple questions and pause for your child to respond.
- When your child says something, respond to what the child is talking about immediately and with interest.
- Add to what your child has said by using more words.
- Praise your child for talking, even if the speech is unclear.
- Take your child lots of places (library, supermarket, the park) and talk about what you see there.
- Say the names of things your child sees or plays with and describe things that happen.
- Talk with preschoolers about what they did, what they will do, why things happen, and their feelings.
- Encourage children to talk to one another.
- Repeat language activities so children learn what to expect.

Promote Early Literacy Learning

Activities such as reading to your child help develop early literacy skills.

- Read often to children, describing and explaining pictures and referring to child's own experiences ("Spot is like your dog.").
- Read slowly to children, pausing at times to ask questions ("What do you think will happen next?").
- Give children books and magazines to look at.
- Read out loud traffic and store signs, labels of packages, and words on a menu.
- Let children draw and write using crayons, markers, and pencils.
- Sing simple songs with repeated words and phrases.
- Talk about sounds and names of letters.
- Play sound, alphabet and word games that focus on beginning and ending sounds of words.
- Play word and listening games to encourage children to listen to familiar patterns and fill in words.
- For older preschoolers, play rhyming games such as hat, cat, bat.

Ear Infections and Language Development

by Joanne E. Roberts, Ph.D. & Susan A. Zeisel, Ed.D.

This booklet will help you understand ear infections and middle ear fluid, how hearing and language learning may be affected, and how you can support children's language learning.

Additional information & resources

Agency for Health Care Policy and Research. (1994). Middle Ear Fluid in Young Children, Consumer Version, *Clinical Practice Guideline Number 12*. (English and Spanish versions are available). The booklet is available online at **www.kidsource.com/kidsource/content/mef.html**

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Stool & the Otitis Media Panel. Otitis Media with Effusion in Young Children. *Clinical Practice Guideline Number 12*. AHCPR Publication No. 94-0622. Rockville, MD: Agency for Health Care Policy and Research, Public Health Service, U.S. Department of Health and Human Services. July, 1994. (Medical Version; Professional Guidelines). This booklet is available online at **www.aap.org/policy/otitis.htm**.

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Questions & Answers about Otitis Media, Hearing and Language Development–**www.asha.org/consumers/brochures/otitis_media.htm**

Infections & Immunizations, Ear Infections– **www.ama-assn.org/insight/h_focus/nemours/infectio/childhd/ear.htm**.

For more information about speech, language, and/or hearing, call American Speech-Language-Hearing Association (ASHA) at 1-800-638-TALK.

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